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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,359	09/25/2001	Zhaomiao Tang	A-70915/DJB/VEJ	8253

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David J. Brezner, Esq.
DORSEY & WHITNEY LLP
Suite 1000
555 California Street
San Francisco, CA 94104-1513

EXAMINER

SIMITOSKI, MICHAEL J

ART UNIT	PAPER NUMBER
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2134

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/963,359

Applicant(s)

TANG, ZHAOMIAO

Examiner

Michael J. Simitoski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-6, 9-11, 13-16 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-6, 9-11, 13-16 & 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


KAMIDIZ ZAND
PRIMARY EXAMINER

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The response of 11/20/2006 was received and considered.
2. Claims 1, 3-6, 9-11, 13-16 & 19-21 are pending.

Response to Arguments

3. Applicant's amendments filed 11/20/2006 overcome the rejections under 35 U.S.C. §112 set forth in the previous Office Action.
4. Applicant's arguments filed 11/20/2006 have been fully considered but they are not persuasive.
5. Applicant's response (pp. 9-10) argues that Schnurer fails to disclose analyzing and cleaning, and Chess fails to disclose simulating in a virtual computer circumstance. However, Chess is relied upon for teaching analyzing and cleaning and Schnurer is relied upon for teaching simulating in a virtual computer circumstance.
6. Applicant's response (p. 10) argues that "the step of obtaining pairs of objects (host and infected host) may in fact destroy or cause unpredicted damages to the computer running the program in Chess. However, Applicant has provided the exact motivation that is given in Schnurer for using a virtual environment. Therefore, Schnurer, as modified by Chess, eliminates this potentially dangerous circumstance as per the inventive concept in Schnurer.
7. Applicant's response (pp. 10-11) argues that Chess fails to disclose the cleaning step of the present invention because Chess discloses extracting information to enable anti-virus software to complete the repair of an infected file by obtaining parts of the original, uninfected host files and the same programs after infection. However, an infected file cannot be repaired

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unless the original file is restored from its infected portion and therefore the file must be cleaned.

The repair information is only stored to repair a file more quickly in the future.

8. Applicant's response (p. 11) argues that Chess teaches away from the present invention because the object is allowed to enter the real computer. However, Schnurer is not being modified to eliminate Schnurer's virtual circumstance. Schnurer simply detects a virus, without repairing. One having ordinary skill in the art recognizes that this lack of cleaning or repairing is not a necessity of Schnurer's invention, just that the invention was not described that far.

Schnurer does, however, recognize the utility of running the viruses in a virtual computer circumstance. Chess, on the other hand, does disclose the analyzing of files and repair based on that analysis. Chess does not disclose that this is done in a virtual computer circumstance.

However, this limitation of Chess does not imply that the benefit of working with viruses in a virtual computer circumstance as described in Schnurer cannot be combined with the analyzing and cleaning method of Chess to create a system which analyzes and repairs infected files in a virtual circumstance. On the contrary, both references describe that these benefits are an advantage and therefore, one having ordinary skill in the art would have been motivated to combine the references to gain the benefits of both in a single invention.

9. Applicant's response (p. 11) argues that there would be no virus for which to scan using the system taught by Chess, in the system taught by Schnurer. However, as described above, one of ordinary skill would have been motivated to extend the utility of Schnurer's virtual computer to repair a file after virus detection, as taught to be beneficial by Chess. Nothing in Chess requires that the method of Chess be performed in a computer (not in a virtual circumstance) and nothing in Schnurer requires that an infected file not be repaired using analysis.

10. Applicant's response (p. 11-12) argues that even if combined, Schnurer and Chess would not result in the present invention. However, as described above and below in the rejections themselves, Schnurer's virtual computer circumstance has the benefit and utility of detecting viruses where they cannot attack a computer and Chess's analysis and repair system has the benefit and utility of taking further steps to clean and infected file, based on analysis, and store the results of the analysis for the cleaning of the same virus from another infected file at a later date.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 11 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,842,002 to Schnurer et al. (**Schnurer**) and U.S. Patent 5,485,575 to Chess et al. (**Chess**).

Regarding claims 1, 11 & 21, Schnurer discloses simulating in a computer a virtual computer circumstance (trapping device, col. 5, lines 7-10 & col. 6, lines 64-67), wherein computer viruses will reside on the virtual computer circumstance, providing a plurality of objects (files) to be infected by computer viruses that induce virus infection (col. 7, lines 39-43), loading a target object (data stream, col. 6, line 64 – col. 7, line 11 & col. 7, lines 25-52) to be scanned into said simulated virtual computer circumstance (trapping device), activating (executing) the target object (virus) to be scanned in said simulated virtual computer

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circumstance (trapping device) to induce the virus infection of the plurality of objects (files, col. 7, lines 39-43) to infect the plurality of objects to be infected (files) and generating standard samples (infected files) which have been infected (col. 7, lines 47-52), comparing the plurality of objects (files) after processing in the activating/executing step with the plurality of objects (files) to be infected originally provided, determining whether there is any change (CRC check) or not; if there is a change, the target object to be scanned contains virus, otherwise the target object to be scanned is free of viruses (col. 7, lines 39-52). Schnurer lacks analyzing to extract information on the viruses indicated by changes between the plurality of objects before infection and the standard samples after infection when it is determined that said target object to be scanned is a virus, said information including at least the size of the virus and key information of the host which has been changed by the virus and to clean the virus from the infected target object by locating the host body and the virus body in the target object, restoring modified key information of the host on the basis of said information and removing the virus body from the target object after the activation step according to the virus size. Chess teaches generated standard samples (infected-host, col. 5, lines 17-41), where if a virus is attached to the threat object and the virus is activated, the target object will include a host body and a virus body (Fig. 3, infected host), extracting information (VAD) of virus infection based on a comparison of the infected files (col. 2, lines 66-67 & col. 4, lines 37-45) and the standard samples (infected-hosts, col. 6, lines 25-32), said information including at least the size (length) of the virus (col. 6, lines 48-54) and key information (offset) which has been changed by the virus (col. 6, lines 45-54) and cleaning (repairing) the virus based on the information (VAD, col. 18, lines 30-38) for the purposes of detecting and removing viruses (col. 2, lines 55-59, col. 6, lines 17-20 & col. 22,

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lines 36-43). While Chess does not explicitly teach locating the virus body, restoring unchanged key information and removing the virus body from the target object according to the virus size, this is inherently done if the original target (program) is to be restored to its original, uninfected state (col. 22, lines 39-43 & Fig. 3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Schnurer to extract information on the viruses indicated by changes between the plurality of objects before infection and the standard samples after infection when it is determined that said target object to be scanned is a virus, said information including at least the size of the virus and key information of the host which has been changed by the virus and to clean the virus from the infected target object by locating the host body and the virus body in the target object, restoring unchanged key information of the host on the basis of said information and removing the virus body from the target object after the activation step according to the virus size. One of ordinary skill in the art would have been motivated to perform such a modification to detect and remove the virus, as taught by Chess (col. 2, lines 55-67, col. 4, lines 37-45, col. 5, lines 17-41, col. 6, lines 17-20, col. 22, lines 36-43 & Fig. 3).

13. Claims 3-4 & 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schnurer** and **Chess**, as applied to claims 1 & 11 above, in further view of Connectix Virtual PC software by **Connectix**, Described in "Connectix Virtual PC" datasheet (VPC) and "Connectix Virtual PC Family Frequently Asked Questions" (FAQ).

Regarding claims 3 & 13, Schnurer, as modified above, is silent regarding details of the emulation. However, Connectix teaches simulating a Central Processing Unit (CPU) (Pentium

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chip, VPC, p. 1, ¶2), simulating an Operating System (OS) (PC-based operating system, VPC, p. 1, ¶1 & ¶3), and simulating peripheral storage devices by simulating storage space and structures of various peripheral storage devices (CD-ROM and PC disk or floppy disk, VPC, p. 2, ¶3).

Virtual PC is used to run applications for one platform (such as Windows) on another platform (such as Macintosh). Further, FAQ teaches that Virtual PC simulates both a hard disk and memory for the emulated software, in this case, Windows (FAQ, p. 9, ¶7). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to simulate a CPU, OS, storage device and memory. One of ordinary skill in the art would have been motivated to perform such a modification to run Windows from within a Macintosh, as taught by Connectix (VPC, p. 1, ¶1-3, p. 2, ¶3 & FAQ, p. 9, ¶7).

Regarding claims 4 & 14, Schnurer discloses multiple baits of different sizes and contents (FAT, executables) (col. 8, lines 13-20).

14. Claims 5-6 & 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schnurer**, **Chess** and **Connectix**, as applied to claims 4 & 14 above, in further view of U.S. Patent 6,067,410 to **Nachenberg**.

Regarding claims 5 & 15, Schnurer discloses multiple baits of different sizes and contents (FAT, executables) (col. 8, lines 13-20), but lacks specifically a specific virus. However, Nachenberg teaches that the bulk of software viruses in DOS based systems are COM files. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include DOS COM bait files. One of ordinary skill in the art would have

been motivated to perform such a modification to include as bait commonly infected files, as taught by Nachenberg (col. 8, lines 13-20).

Regarding claims 6 & 16, Schnurer discloses simulating the system time to generate virtual system date and time for inducing the viruses that are sensitive to date and time (col. 7, lines 33-35).

15. Claims 9-10 & 19-20, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schnurer, Chess and Connectix**, as applied to claims 3 & 13 above, in further view of U.S. Patent 5,537,636 to Uchida et al. (**Uchida**), U.S. Patent 6,356,915 to Chtchetkine et al. (**Chtchetkine**) & U.S. Patent 6,192,456 to Lin et al. (**Lin**). Schnurer as modified above, discloses system files and bait files for inducing viruses (Schnurer col. 6, line 64 – col. 7, line 11 & col. 7, lines 25-52) and teaches that VPC is software emulation of the hardware on a PC (Connectix FAQ, p. 9, ¶6-7), but lacks explicit disclosure of sectors, tracks, cylinders, a primary boot sector and corresponding blank sector of the No. 0 track, next boot sector, File Allocation Table, root directory sector. However, Uchida teaches that disks contain cylinders, tracks and sectors (col. 6, line 61 – col. 7, line 65), a primary boot sector (col. 8, lines 13-15) and corresponding blank sector of the number 0 track (col. 8, lines 28-32), and a File Allocation Table (col. 5, lines 46-50). Further, Chtchetkine teaches that the logical structure on the FAT file system requires a boot sector that describes the root directory sectors within the disk (col. 2, lines 22-27). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to assign memory to simulate a virtual hard disk including a space by sector number, track number and cylinder number, a primary boot sector and corresponding

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blank sector of the No. 1 track, File Allocation table and root directory sector. One of ordinary skill in the art would have been motivated to perform such a modification to simulate in software the hardware (hard disk, floppy disk) of a PC, as taught by Connectix (Connectix FAQ, p. 9, ¶6-7), Uchida (col. 5, lines 46-50, col. 6, line 61 – col. 7, line 65, col. 8, lines 13-15 & col. 8, lines 28-32) and Chtchetkine (col. 2, lines 22-27). As modified, Schnurer lacks a next boot sector. However, Lin teaches that storing multiple partitions requires multiple boot sectors (Fig. 3 & col. 4, lines 52-54). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a next boot sector. One of ordinary skill in the art would have been motivated to perform such a modification to use multiple partitions, as taught by Lin (Fig. 3 & col. 4, lines 52-54).

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Simitoski whose telephone number is (571) 272-3841. The examiner can normally be reached on Monday - Thursday, 6:45 a.m. - 4:15 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (571) 272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJS



KAMBIZ ZAND
PRIMARY EXAMINER

January 11, 2007